

CLAIMS:

1. A process for automated tool management comprising the steps of:
 - issuing a message in a selected protocol by a user, wherein said message comprises a request to perform a selected action on said tool, wherein said message comprises one or more of data and a pointer pointing to an object in an equipment model of said tool, wherein said equipment model comprises a logical representation of said tool;
 - receiving said message via an object-oriented interprocess;
 - invoking a method of said object in response to said pointer and said selected action, wherein if said message includes data, then passing said data to said method; and
 - transferring a value to said user, wherein said value is associated with said requested action and said data.
2. The method as recited in claim 1 further comprising the step of:
 - extracting one or more of said data and said pointer of said received message.
3. The process as recited in claim 1, wherein if said tool is an asynchronous source and if said value associated with said requested action is current, then the method further comprises the steps of:
 - transferring said value to an application interface unit by said equipment model, wherein said application interface unit interfaces said user with said equipment model;
 - incorporating said value into a return message to said user; and
 - transferring said return message via said object-oriented interprocess communication to said user in response to an address provided by said user.

1 4. The process as recited in claim 1, wherein if said tool is a synchronous source,
2 then the method further comprises the steps of:

3 retrieving said value from said tool by a tool interface unit, wherein said tool
4 interface unit interfaces said tool with said equipment model; and
5 transferring said value to said equipment model.

1 5. The process as recited in claim 4 further comprising the steps of:
2 incorporating said value into a return message to said user; and
3 transferring said return message to said user in response to an address
4 provided by said user.

1 6. The process as recited in claim 1, wherein if said tool is not one of an
2 asynchronous source and a synchronous source or if said tool is an asynchronous
3 source that does not supply a current value associated with said requested action then
4 the method further comprises the step of:

5 retrieving said value from a database of said equipment model.

1 7. The process as recited in claim 6 further comprising the steps of:
2 incorporating said value into a return message to said user; and
3 transferring said return message to said user in response to an address
4 provided by said user.

1 8. The method as recited in claim 1, wherein said interprocess communication
2 comprises a protocol selected from the following: Component Object Model (COM),
3 Remote Method Invocation(RMI), CORBA, Simple Object Access Protocol (SOAP),
4 SECS, GEM, HyperText Markup Language (HTML), Extensible Markup Language
5 (XML).

1 9. The method as recited in claim 1, wherein said method of said object is
2 invoked to remotely access and electronically diagnose said tool.

- 1 10. The method as recited in claim 1, wherein said data in said message is
2 notification data.

1 11. A computer program product having a computer readable medium having
2 computer program logic recorded thereon for automated tool management,
3 comprising:

4 programming operable for issuing a message in a selected protocol by a user,
5 wherein said message comprises a request to perform a selected action on said tool,
6 wherein said message comprises one or more of data and a pointer pointing to an
7 object in an equipment model of said tool, wherein said equipment model comprises a
8 logical representation of said tool;

9 programming operable for receiving said message via an object-oriented
10 interprocess communication;

11 programming operable for invoking a method of said object in response to
12 said pointer and said selected action, wherein if said message includes data, then
13 passing said data to said method; and

14 programming operable for transferring a value to said user, wherein said value
15 is associated with said requested action and said data.

1 12. The computer program product as recited in claim 11 further comprises:

2 programming operable for extracting one or more of said data and said pointer
3 of said received message.

1 13. The computer program product as recited in claim 11, wherein if said tool is
2 an asynchronous source and if said value associated with said requested action is
3 current, then the computer program product further comprises:

4 programming operable for transferring said value to an application interface
5 unit by said equipment model, wherein said application interface unit interfaces said
6 user with said equipment model;

7 programming operable for incorporating said value into a return message to
8 said user; and

9 programming operable for transferring said return message via said object-
10 oriented interprocess communication to said user in response to an address provided
11 by said user.

1 14. The computer program product as recited in claim 11, wherein if said tool is a
2 synchronous source, then the method further comprises the steps of:

3 programming operable for retrieving said value from said tool by a tool
4 interface unit, wherein said tool interface unit interfaces said tool with said equipment
5 model; and

6 programming operable for transferring said value to said equipment model.

1 15. The computer program product as recited in claim 14 further comprises:

2 programming operable for incorporating said value into a return message to
3 said user; and

4 programming operable for transferring said return message to said user in
5 response to an address provided by said user.

1 16. The computer program product as recited in claim 11, wherein if said tool is
2 not one of an asynchronous source and a synchronous source or if said tool is an
3 asynchronous source that does not supply a current value associated with said
4 requested action then the computer program further comprises:

5 programming operable for retrieving said value from a database of said
6 equipment model.

1 17. The computer program product as recited in claim 16 further comprises:

2 programming operable for incorporating said value into a return message to
3 said user; and

4 programming operable for transferring said return message to said user in
5 response to an address provided by said user.

1 18. The computer program product as recited in claim 11, wherein said
2 interprocess communication comprises a protocol selected from the following:
3 Component Object Model (COM), Remote Method Invocation(RMI), CORBA,
4 Simple Object Access Protocol (SOAP), SECS, GEM, HyperText Markup Language
5 (HTML), Extensible Markup Language (XML).

1 19. The computer program product as recited in claim 11, wherein said method of
2 said object is invoked to remotely access and electronically diagnose said tool.

1 20. The computer program product as recited in claim 11, wherein said data in
2 said message is notification data.

1 21. A system, comprising:
2 a processor;
3 a memory unit storing a computer program operable for storing a computer
4 program operable for automated tool management; and
5 a bus system coupling the processor to the memory, wherein the computer
6 program is operable for performing the following programming steps:
7 issuing a message in a selected protocol by a user, wherein said
8 message comprises a request to perform a selected action on said tool, wherein said
9 message comprises one or more of data and a pointer pointing to an object in an
10 equipment model of said tool, wherein said equipment model comprises a logical
11 representation of said tool;
12 receiving said message via an object-oriented interprocess;
13 invoking a method of said object in response to said pointer and said
14 selected action, wherein if said message includes data, then passing said data to said
15 method; and
16 transferring a value to said user, wherein said value is associated with
17 said requested action and said data.

1 22. The system as recited in claim 21, wherein the computer program is further
2 operable for performing the following programming step:

3 extracting one or more of said data and said pointer of said received message.

1 23. The system as recited in claim 21, wherein if said tool is an asynchronous
2 source and if said value associated with said requested action is current, then the
3 computer program is further operable for performing the following programming
4 steps:

5 transferring said value to an application interface unit by said equipment
6 model, wherein said application interface unit interfaces said user with said
7 equipment model;

8 incorporating said value into a return message to said user; and
9 transferring said return message via said object-oriented interprocess
10 communication to said user in response to an address provided by said user.

1 24. The system as recited in claim 21, wherein if said tool is a synchronous
2 source, then the computer program is further operable for performing the following
3 programming steps:

4 retrieving said value from said tool by a tool interface unit, wherein said tool
5 interface unit interfaces said tool with said equipment model; and
6 transferring said value to said equipment model.

1 25. The system as recited in claim 24, wherein the computer program is further
2 operable for performing the following programming steps:

3 incorporating said value into a return message to said user; and
4 transferring said return message to said user in response to an address
5 provided by said user.

1 26. The system as recited in claim 21, wherein if said tool is not one of an
2 asynchronous source and a synchronous source or if said tool is an asynchronous
3 source that does not supply a current value associated with said requested action then
4 the computer program is further operable for performing the following programming
5 step:

6 retrieving said value from a database of said equipment model.

1 27. The system as recited in claim 26, wherein the computer program is further
2 operable for performing the following programming steps:

3 incorporating said value into a return message to said user; and
4 transferring said return message to said user in response to an address
5 provided by said user.

1 28. The system as recited in claim 21, wherein said interprocess communication
2 comprises a protocol selected from the following: Component Object Model (COM),
3 Remote Method Invocation(RMI), CORBA, Simple Object Access Protocol (SOAP),
4 SECS, GEM, HyperText Markup Language (HTML), Extensible Markup Language
5 (XML).

1 29. The system as recited in claim 21, wherein said method of said object is
2 invoked to remotely access and electronically diagnose said tool.

1 30. The system as recited in claim 21, wherein said data in said message is
2 notification data.

1 31. A method for tool access control comprising the steps of:

2 receiving a message sent by a user via an object-oriented interprocess,
3 wherein said message comprises a request to perform a selected action on a tool,
4 wherein said message comprises a pointer pointing to an object in an equipment
5 model of said tool;

6 generating a security wrapper layer, wherein said security wrapper layer
7 provides a layer of protection to said equipment model; and

8 creating a security wrapper object in said security wrapper layer, wherein a
9 pointer to a corresponding equipment model object is stored in said security wrapper
10 object.

1 32. The method as recited in claim 31, wherein if said corresponding equipment
2 model object is said object corresponding to said request then a pointer to said
3 corresponding security wrapper object is transferred to said user.

1 33. The method as recited in claim 32 further comprising the step of:

2 determining if said selected action on said tool can be performed in response
3 to access rules stored in said corresponding security wrapper object.

1 34. The method as recited in claim 33, wherein if said selected action on said tool
2 can be performed then the method further comprises the step of:

3 invoking a method by said corresponding security wrapper object to perform
4 said selected action.

1 35. A computer program product having a computer readable medium having
2 computer program logic recorded thereon for tool access control comprising:

3 programming operable for receiving a message sent by a user via an object-
4 oriented interprocess, wherein said message comprises a request to perform a selected
5 action on a tool, wherein said message comprises a pointer pointing to an object in an
6 equipment model of said tool;

7 programming operable for generating a security wrapper layer, wherein said
8 security wrapper layer provides a layer of protection to said equipment model; and

9 creating a security wrapper object in said security wrapper layer, wherein a
10 pointer to a corresponding equipment model object is stored in said security wrapper
11 object.

1 36. The computer program product as recited in claim 35, wherein if said
2 corresponding equipment model object is said object corresponding to said request
3 then a pointer to said corresponding security wrapper object is transferred to said
4 user.

1 37. The computer program product as recited in claim 36 further comprises:
2 programming operable for determining if said selected action on said tool can
3 be performed in response to access rules stored in said corresponding security
4 wrapper object.

1 38. The computer program product as recited in claim 37, wherein if said selected
2 action on said tool can be performed then the computer program product further
3 comprises:

4 programming operable for invoking a method by said corresponding security
5 wrapper object to perform said requested action.

1 39. A system, comprising:

2 a processor;

3 a memory unit storing a computer program operable for storing a computer
4 program operable for tool access control; and

5 a bus system coupling the processor to the memory, wherein the computer
6 program is operable for performing the following programming steps:

7 receiving a message sent by a user via an object-oriented interprocess,
8 wherein said message comprises a request to perform a selected action on a tool,
9 wherein said message comprises a pointer pointing to an object in an equipment
10 model of said tool;

11 generating a security wrapper layer, wherein said security wrapper
12 layer provides a layer of protection to said equipment model; and

13 creating a security wrapper object in said security wrapper layer,
14 wherein a pointer to a corresponding equipment model object is stored in said
15 security wrapper object.

1 40. The system as recited in claim 39, wherein if said corresponding equipment
2 model object is said object corresponding to said request then a pointer to said
3 corresponding security wrapper object is transferred to said user.

1 41. The system as recited in claim 40, where the computer program is further
2 operable for performing the following programming step:

3 determining if said selected action on said tool can be performed in response
4 to access rules stored in said corresponding security wrapper object.

1 42. The method as recited in claim 41, wherein if said selected action on said tool
2 can be performed then the computer program is further operable for performing the
3 following programming step:

4 invoking a method by said corresponding security wrapper object to perform
5 said selected action.